lomas, or for the Associateship of the College, or who are studying some definite subject with the view of teaching, or original research, or with regard to its practical application to manufacturing industries.

We have received the Proceedings of the Royal Physical Society, Edinburgh, for the session 1886-87. Among the contents is an interesting Presidential Address, by Mr. John A. Harvie-Brown, on the faunal importance of the Isle of May, purely from an ornithological point of view.

We have received the first part of what promises to be an admirable work—"An Illustrated Manual of British Birds," by Mr. Howard Saunders. The book will be completed in about twenty monthly parts. It is being issued by Messrs. Gurney and Jackson.

A twelfth edition of the late Dr. David Page's "Introductory Text-book of Geology" (Blackwood) has been issued. It has been edited by Prof. Charles Lapworth, who, in order to bring all the departments up to date, has found it necessary to recast or re-write almost the whole of the work, with the exception of the introductory and concluding chapters.

Mr. Haly, Director of the Colombo Museum, has published a first Report on the Collection of Birds in that institution. It fills about eighty pages demy octavo.

The new number (the third) of the American periodical—the *Technology Quarterly*—opens with a valuable account, by Mr. W. O. Crosby, of the methods of instruction in mineralogy and structural geology in the Massachusetts Institute of Technology. Mr. S. W. Hunt continues his discussion of the precision of measurements; and Mr. F. W. Clark contributes notes on the assaying of lead, silver, and gold.

The Johns Hopkins University, Baltimore, has received from the Maryland Academy of Sciences a considerable portion of its scientific collection. Among the specimens is the skeleton of a young fin-back whale captured in the lower part of Chesapeake Bay. Stumps of cycads, which were presented to the Academy by Mr. P. T. Tyson, are also greatly valued. They were taken from the Upper Jurassic clays of Maryland.

According to a communication by M. A. Pavloff to the Moscow Society of Naturalists, the meteorite which fell in August last at Okhansk, in Perm, is one of the largest yet known. Its weight, before it was broken, was about 1100 lbs. It belongs to the group of stony meteorites. As it contains particles of unoxidized nickel iron, it must be classified with the sporado-siderites. Its spherical mineral aggregates bring it under the heading of chondrites.

The following extract from a private letter by a British officer, dated Sittang, Upper Chindwin, February 4, 1888, may be of interest to anthropologists:—"We have arrived here after eight days of hill-marching with very many ups and downs—the highest point just over 5000 feet. We are now completely out of Burma—the hills were sparsely inhabited by uncivilized Chins and Nagas—and are now in a small State, a plateau in the mountains at a level of nearly 3000 feet. The ruler and his people are Hindus by conversion or adoption some hundred years or less ago—the only example I know of Hindu proselytes. The Burmans are tattooed from waist to knee with a fine pattern in blue, looking as if dressed in short dark tights. They wear the hair long, rolled on the top of the head, and covered with a bright-coloured silk kerchief, put on somewhat as one sees in pictures of Negro women of the Southern States in America. The Shans, who were our neighbours in the hills near the Ruby Mines, wear very baggy trousers, like the Chinese, of coarse blue cotton stuff, have uncut hair, and for a head-covering a hat, either of straw or a coarser kind of wicker, of colossal circumference. This hat is as big as an ordinary silk umbrella, but flat except in the middle, which is conical for the reception of the top-knot, and as this might sometimes prove an insecure hold they often wear a fastening under the jaw. They tattoo more extensively than the Burmans, and sometimes stow away jewels under the skin. I have seen lumps which may have been so caused, from their appearance, but I never had the chance of proving their secretion by enucleation. The Nagas, whom we have used in the last few days as carriers, do not tattoo, and wear a skimpy kilt. The hair is uncut and coiled on the front of the head, the lump or coil of hair secured by a band round the base; the band often made of strings of blue beads or a tape of leather, on which two or three rows of small white shells are sewn. A silver or other metal skewer, about ten inches long, is often stuck through the hair, like the arrows worn by some belles of the West—whether only for adornment, or used as a fork or harpoon, I know not. All these savages have the ears pierced. The Naga carries his snuff in a bit of bamboo thicker than an ordinary lead-pencil; and the Burman, who smokes eternally, sticks his cigar *in* his ear-lobe—and his cigar is about the size of that Mr. Verdant Green was induced to smoke, of such calibre that it would not pass through a Colt's revolver barrel. The Nagas here are not tall, but their calves and thighs would attract attention even at a Highland gathering at Athol or Braemar. Their loads they carry with a neatly made neck-and-shoulder yoke. From the yoke in front is a brow-band, while behind a rope-loop passes under the load."

The Students' Engineering Society of the University College, Bristol, concluded the winter session, on March 26, with a public disputation on the gas-engine *v.* the steam-engine, and on March 27 gave a *conversazione*. The electrical and engineering exhibits attracted much attention, and a highly appreciated concert was rendered by the students and their friends.

The additions to the Zoological Society's Gardens during the past week include a Gannet (*Sula bassana*), a Greater Black-backed Gull (*Larus marinus*), British, presented by Mrs. Rickards; a Hawfinch (*Coccothraustes vulgaris*), British, presented by Mr. Chas. Faulkner; a Common Swan (*Cygnus olor*), British, a —— Penguin (*Eudyptes pachyrhynchus*, from New Zealand, deposited.

OUR ASTRONOMICAL COLUMN.

The Period of Algol.—Mr. S. C. Chandler publishes, in Nos. 165, 166, and 167 of *Gould's Astronomical Journal*, a careful and thorough discussion of the period of this interesting variable. Starting with the observations of Goodricke in 1782, he had at his disposal the times of nearly 700 minima as observed by about fifty astronomers, spread over a little more than a century. His first task was to reduce these observations to a common system—an operation the more necessary, since, in the present low state of our knowledge, differences in the processes of reduction are more important in their effect, if they do not completely overshadow personal differences in observation. Mr. Chandler decided, therefore, to abandon the use of the minimum phase as a reference-point, and re-reduced the entire mass of observations on a method the essential principle of which consisted in taking, as the reference-point, the mean between the times of equal brightness on the descending and ascending branches of the light-curve. This involved the abandonment of 199 minima, for which sufficient details could not be procured, but left 496 to be employed in the investigation. Unfortunately these are not by any means evenly distributed as to time, and in the earlier part of the present century satisfactory observations are very scarce.

That the period of Algol was itself subject to change was suspected by Wurm and proved by Argelander, but the formulæ deduced by the latter have not represented later observations. Mr. Chandler has succeeded, however, in reducing its apparently highly complicated anomalies to a comparatively simple law.

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This law comprises two inequalities, with the periods respectively of 141·3 years and 37·7, and coefficients of 173·3 and 18·0 minutes of time. A third period of 17 years, with a coefficient of 3·5 minutes, was suspected, but the coefficient is so small as to bring it almost within the limit of errors of observation. The resulting elements are as follow: 1888 January 3, 7h. 21m. 29·23s. (G.M.T.) + 2d. 20h. 48m. 55·425s. E′ + 173·3m. sin. $(\frac{1}{50}E' + 202° 30')$ + 18·0m. sin $(\frac{3}{40}E' + 203° 15')$ + 3·5m. sin $(\frac{1}{6}E' + 90° 20')$; where E′ = E (Schonfeld) − 11210. The interpretation of the theory is as follows:—The period at the time of Goodricke's discovery of the character of the variation was 2d. 20h. 48m. 58·0s., lengthening to 59·8s. in 1798, diminishing again in the next ten years to 57·2s., and then again lengthening irregularly to 59·2s. in 1830. A rapid diminution shortly followed, and the rate was reduced to 54·0s. in 1843. After a halt a further but less rapid diminution set in, and in 1858 the period was 52·8s. The following six years saw an increase of 1·6s., followed by another shortening, until in 1877 the period had fallen to 51·1s., from which time it has remained nearly constant; but should the theory be correct, a period of increase must shortly set in, which, with halts and retrogressions, will attain a maximum somewhat late in the coming century.

The paper concludes with a table of heliocentric times of minima up to August 1898.

M. Oudemans, Director of the Utrecht Observatory, is likewise preparing a work on this variable, and requests observers to transmit to him copies of their notes on all observed minima since 1883.

OBSERVATIONS OF VARIABLE STARS.—Mr. Edwin Sawyer has given, in Nos. 164 and 165 of *Gould's Journal*, his observations of several variable stars made during the year 1886. The following table will show how some of these compare with the ephemerides given week by week in NATURE.

Star.	Phase.	Observed.	Calculated.
V Cancri	*M*	1886 March 29	April 12
R Ursæ Majoris	*M*	1886 April 29	May 12
R Virginis	*M*	1886 April 8	April 10
S Coronæ	*M*	1886 May 10	April 10
R Scuti	*m*	1886 July 21	June 27
	M	1886 Sept. 12	Aug. 1
	m	1886 Dec. 2	Nov. 17

Mira Ceti was observed at maximum 1886 January 9; *g* (30) Herculis at minimum June 14, and at maximum September 20; and W Cygni at three epochs, viz. *m* July 8, *M* September 10, and *m* November 5.

Gore's new variable near χ_1 Orionis, to which Mr. Sawyer gives the lettering U Orionis, but which other astronomers have generally designated T, attained a maximum about 1887 December 14. The maximum was only a feeble one, −7·5 mag. The light remained almost stationary from 1887 November 29 to 1888 January 2, a period of thirty-four days. The period of the star must be almost exactly a year.

The variable Lal. 40083, discovered by Mr. S. C. Chandler (see NATURE, vol. xxxv. p. 282), and to which he has given the name X Cygni, has shown from further observation that its light-curve is not constant in different periods, the minimum brightness being especially variable, but since the bright and faint minima do not alternate regularly the star does not belong to the β Lyræ class. Mr. Chandler's revised elements for the star are as follow: 1886 October 13, 14h. 20m. G.M.T. + 15d. 14h. 24m. E. Approximate duration of increase 5·6 days, of decrease 10·0 days. The maximum brilliancy is generally about 6·4m.; the minimum ranges from 7·2m. to 7·7m.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1888 APRIL 8–14.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on April 8

Sun rises, 5h. 20m.; souths, 12h. 1m. 43·3s.; sets, 18h. 43m.: right asc. on meridian, 1h. 10·4m.; decl. 7° 29′ N. Sidereal Time at Sunset, 7h. 53m.

Moon (New on April 11, 9h.) rises, 4h. 46m.; souths, 10h. 6m.; sets, 15h. 35m.: right asc. on meridian, 23h. 14·6m.; decl. 8° 21′ S.

Planet.	Rises. h. m.	Souths. h. m.	Sets. h. m.	Right asc. on meridian. h. m.	Declination on meridian. ° ′
Mercury	4 52	10 29	16 6	23 37·0	5 8 S.
Venus	4 47	10 32	16 17	23 40·9	3 40 S.
Mars	18 53*	0 22	5 51	13 28·6	6 48 S.
Jupiter	22 57*	3 10	7 23	16 16·9	20 19 S.
Saturn	10 59	18 58	2 57*	8 7·8	20 48 N.
Uranus	18 9	23 46	5 23*	12 56·4	5 17 S.
Neptune	6 56	14 37	22 18	3 45·7	18 11 N.

* Indicates that the rising is that of the preceding evening and the setting that of the following morning.

April.	h.	
8	23	Mercury in conjunction with and 1° 16′ north of the Moon.
9	1	Venus in conjunction with and 2° 24′ north of the Moon.
11	6	Mars in opposition to the Sun.
14	4	Mercury in conjunction with and 1° 10′ south of Venus.

Variable Stars.

Star.	R.A. h. m.	Decl. ° ′		h. m.	
U Cephei	0 52·4	81 16 N.	Apr. 12,	4 2	*m*
Algol	3 0·9	40 31 N.	,, 13,	3 26	*m*
R Canis Majoris	7 14·5	16 12 S.	,, 11,	20 7	*m*
U Monocerotis	7 25·5	9 33 S.	,, 12,		*m*
S Cancri	8 37·5	19 26 N.	,, 13,	19 30	*m*
δ Libræ	14 55·0	8 4 S.	,, 10,	22 56	*m*
U Ophiuchi	17 10·9	1 20 N.	,, 11,	2 57	*m*
			,, 11,	23 5	*m*
W Sagittarii	17 57·9	29 35 S.	,, 9,	4 0	*m*
Z Sagittarii	18 14·8	18 55 S.	,, 11,	1 0	*M*
U Sagittarii	18 25·3	19 12 S.	,, 10,	3 0	*m*
			,, 13,	2 0	*M*
η Aquilæ	19 46·8	0 43 N.	,, 14,	2 0	*m*
T Vulpeculæ	20 46·7	27 50 N.	,, 13,	4 0	*M*
R Vulpeculæ	20 59·4	23 23 N.	,, 13,		*M*
δ Cephei	22 25·0	57 51 N.	,, 12,	3 0	*m*

M signifies maximum; *m* minimum.

Meteor-Showers.

	R.A.	Decl.	
Near α Ursæ Majoris	163°	60° N.	April 10 and 11.
,, 42 Herculis	248	50 N.	,, ,,

GEOGRAPHICAL NOTES.

A SHORT excursion into the almost unknown interior of San Domingo was made last summer by Baron H. Eggers, in the course of which he explored the mountainous district, and made a complete study of the vegetation of this elevated region; he further discovered a route along which the exploration of this little-known mountain region may be carried out with facility. The following details are taken from the traveller's own account of his journey, published in *Petermann's Mitteilungen* (Part 2, 1888). He left Puerto Plata, on the north coast, on May 2 last, and about the middle of the same month found himself at Jarabacoa on the Rio Yagin, having passed through Santiago on his way. While at Jarabacoa he ascended Monte Barrero (4100 feet) in the vicinity of the town. The steep slopes of this peak are covered with lofty pine woods. In the small ravines and between rocks the traveller observed many interesting plants, *e.g.* the dark red *Fuchsia triphylla*, a bright red *Siphocampylos*, a large *Pentarhaphia*, and a beautiful *Cyathea;* he also found a large number of hitherto unnoticed plants, including an ilex, several Compositæ, Labiatæ, &c. The animal life in these pine forests appears to be very poor: there are scarcely any insects, and a species of crow is the only bird seen. At the end of May the traveller with a small party of blacks set out in a due southerly direction for the Valle de Constanza. The valley is well watered, and its height above the sea is 3840 feet. Its inhabitants, numbering 100, are engaged in cattle-rearing, and the cultivation of beans, maize, cassava, tobacco, &c. The climate is cool, and from November to March dry; during the rest of the year it rains. The thermometer at 6 o'clock in the morning of May 28 stood at 59° F. The higher part of the surrounding mountains, which almost everywhere contain gold, though in small quantities, are quite unexplored. From the Valle de Constanza the traveller made a

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